CLAIMS

This is a complete and current listing of the current claims marked with status identifiers in parentheses.

1. (Previously Presented) A color display device, comprising:

a color processor to determine a relationship between plural color components of an input color image signal in terms of gradation levels of the plural color components of an input color image signal, and to process the input color image signal by carrying out calculation based on the determined relationship for each of the plural color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the plural color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation; and

a color display panel to display the processed color image signal.

2. (Previously Presented) A color display device that determines a relationship between three color components of an input color image signal in terms of gradation levels of the three color components of an input color image signal, and that carries out a different calculation for each input color image signal depending on which of six patterns of the relationship that the input color image signal belongs to, the calculation being performed for each of the three color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the three color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation, and wherein:

the input color image signal is converted into an output color image signal with the at least three color components respectively having gradation levels of r', g' and b', which are given by:

r'=r+ro+yo+mo,

g'=g+go+yo+co,

b'=b+bo+mo+co,

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and

in a case [1] where r≥g≥b:

$ro=Krg(r-g)^{Nr}$,

$yo=Kyg(g-b)^{Ny}$,

go=bo=mo=co=0,

in a case [2] where r≥b>g:

$ro=Krb(r-b)^{Nr}$,

$mo=Kmb(b-g)^{Nm}$,

go=bo=yo=co=0,

in a case [3] where b>r≥g:

$bo=Kbr(b-r)^{Nb}$,

$mo=Kmr(r-g)^{Nm}$,

ro=go=yo=co=0,

in a case [4] where b>g>r:

$bo=Kbg(b-g)^{Nb}$,

$co=Kcg(g-r)^{Nc}$,

ro=go=yo=mo=0,

in a case [5] where g≥b>r:

$go=Kgb(g-b)^{Ng}$,

$co=Kcb(b-r)^{Nc}$,

ro=bo=yo=mo=0,

in a case [6] where g>r≥b:

$go=Kgr(g-r)^{Ng}$,

$yo=Kyr(r-b)^{Ny}$,

ro=bo=mo=co=0,

in which Krg, Krb, Kbr, Kbg, Kgb, Kgr, Kyg, Kyr, Kmb, Kmr, Kcg and Kcb are variables which change depending on values of r, g and b; and Nr, Ng, Nb, Ny, Nm and Nc are constants not less than 0.

3. (Original) The color display device as set forth in claim 1, wherein:

the variables are determined so that gradation levels of the input color image signal after color compensation fall within a range of a color model that expresses the gradation levels of the input color image signal before and after color compensation in terms of distributions of hue, luminance and saturation.

4. (Cancelled)

5. (Withdrawn – Previously Presented) The color display device as set forth in claim 2, wherein:

the variables are expressed as:

Krg=Cr·frg (r,b), Krb=Cr·frb (r,g),

Kgr=Cg·fgr (g,b), Kgb=Cg·fgb (g,r),

Kbr=Cb·fbr (b,g), Kbg=Cb·fbg (b,r),

Kyg=Cy·fyg (r,b), Kmb=Cm·fmb (r,g),

Kmr=Cm·fmr (b,g), Kcg=Cc·fcg (b,r),

Kcb=Cc·fcb (g,r), Kyr=Cy·fyr (g,b),

where Cr, Cb, Cg, Cy, Cm and Cc are constants; frg, frb, fgr, fgb, fbr, fbg, fyg, fmb, fmr, fcg, fcb and fyr are functions which respectively change depending on values of r, g and b in corresponding brackets; and the r, g and b are obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1.

6. (Withdrawn – Previously Presented) The color display device as set forth in claim 2, wherein:

the variables are expressed as:

Krg=Cr·far (r)·fag (b), Krb=Cr·far (r)·fab (g),

Kgr=Cg·fag (g)·far (b), Kgb=Cg·fag (g)·fab (r),

Kbr=Cb·fab (b)·far (g), Kbg=Cb·fab (b)·fag (r),

Kyg=Cy·far (r)·fab (b), Kmb=Cm·far (r)·fag (g),

Kmr=Cm·fab (b)·fag (g), Kcg=Cc·fab (b)·far (r),

Kcb=Cc·fag (g)·fa r(r), Kyr=Cy·fag (g)·fab (b),

where Cr, Cb, Cg, Cy, Cm and Cc are constants; far, fab and fag are functions which respectively change depending on values of r, g and b in corresponding brackets; and the r, g and b are obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1.

7. (Withdrawn) The color display device as set forth in claim 6, wherein:

the functions far(r), fab(b) and fag(g) are continuous functions which give 0 when the r, g and b $(0 \le r,g,b \le 1)$ are 0 or 1.

8. (Withdrawn- Previously Presented) The color display device as set forth in claim 2, wherein:

the variables are expressed as:

$Krg=Cr \cdot \alpha r \cdot \alpha b$, $Krb=Cr \cdot \alpha r \cdot \alpha g$,

$Kgr=Cg \cdot \alpha g \cdot \alpha b$, $Kgb=Cg \cdot \alpha g \cdot \alpha r$,

$Kbr=Cb \cdot \alpha b \cdot \alpha g$, $Kbg=Cb \cdot \alpha b \cdot \alpha r$,

$Kyg=Cy \cdot \alpha r \cdot \alpha b$, $Kmb=Cm \cdot \alpha r \cdot \alpha g$,

$Kmr=Cm \cdot \alpha b \cdot \alpha g$, $Kcg=Cc \cdot \alpha b \cdot \alpha r$,

$Kcb=Cc \cdot \alpha g \cdot \alpha r$, $Kyr=Cy \cdot \alpha g \cdot \alpha b$,

$\alpha r=f_0 \times r^k \quad (0 \le r < Mr)$,

$\alpha r=f_1 \times (1-r)^k \quad (Mr \le r \le 1)$,

$\alpha g=g_0 \times gk \quad (0 \le g < Mg)$,

$\alpha g=g_1 \times (1-g)^k \quad (Mg \le g \le 1)$,

$\alpha b=h_0 \times b^k \quad (0 \le b < Mb)$,

$\alpha b=h_1 \times (1-b)^k \quad (Mb \le b \le 1)$,

where f_0, f_1, g_0, g_1, h_0, h_1, Mr, Mg, Mb and k are constants; Cr, Cb, Cg, Cy, Cm and Cc are constants, and the r, g and b are obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1.

9. (Withdrawn– Previously Presented) The color display device as set forth in claim 2, wherein:

the variables are expressed as:

$Krg=Cr\cdot\alpha r\cdot\alpha b$, $Krb=Cr\cdot\alpha r\cdot\alpha g$,

$Kgr=Cg\cdot\alpha g\cdot\alpha b$, $Kgb=Cg\cdot\alpha g\cdot\alpha r$,

$Kbr=Cb\cdot\alpha b\cdot\alpha g$, $Kbg=Cb\cdot\alpha b\cdot\alpha r$,

$Kyg=Cy\cdot\alpha r\cdot\alpha b$, $Kmb=Cm\cdot\alpha r\cdot\alpha g$,

$Kmr=Cm\cdot\alpha b\cdot\alpha g$, $Kcg=Cc\cdot\alpha b\cdot\alpha r$,

$Kcb=Cc\cdot\alpha g\cdot\alpha r$, $Kyr=Cy\cdot\alpha g\cdot\alpha b$,

$\alpha r=2\times r \quad (0\le r<0.5)$,

$\alpha r=2\times(1-r) \quad (0.5\le r\le 1)$,

$\alpha g=2\times g \quad (0\le g<0.5)$,

$\alpha g=2\times(1-g) \quad (0.5\le g\le 1)$,

$\alpha b=2\times b \quad (0\le b<0.5)$,

$\alpha b=2\times(1-b) \quad (0.5\le b\le 1)$,

where Cr, Cb, Cg, Cy, Cm and Cc are constants, and the r, g and b are obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1.

10. (Withdrawn– Previously Presented) The color display device as set forth in claim 2, wherein:

the variables are expressed as:

$Krg=Cr\cdot fmax(r)\cdot fmin(b)$, $Krb=Cr\cdot fmax(r)\cdot fmin(g)$,

$Kgr=Cg\cdot fmax(g)\cdot fmin(b)$, $Kgb=Cg\cdot fmax(g)\cdot fmin(r)$,

$Kbr=Cb\cdot fmax(b)\cdot fmin(g)$, $Kbg=Cb\cdot fmax(b)\cdot fmin(r)$,

$Kyg=Cy\cdot fmax(r)\cdot fmin(b)$, $Kmb=Cm\cdot fmax(r)\cdot fmin(g)$,

$Kmr=Cm\cdot fmax(b)\cdot fmin(g)$, $Kcg=Cc\cdot fmax(b)\cdot fmin(r)$,

$Kcb=Cc\cdot fmax(g)\cdot fmin(r)$, $Kyr=Cy\cdot fmax(g)\cdot fmin(b)$,

where Cr, Cb, Cg, Cy, Cm and Cc are constants; fmax, and fmin are functions which respectively change depending on values of r, g and b in corresponding brackets; and the r, g and b are obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1.

11. (Withdrawn) The color display device as set forth in claim 10, wherein:

the function fmax is a continuous function which gives 0 when the r, g and b ($0 \le r,g,b \le 1$) are 1; and the function fmin is continuous function which gives 0 when the r, g and b ($0 \le r,g,b \le 1$) are 0.

12. (Withdrawn– Previously Presented) The color display device as set forth in claim 2, wherein:

the variables are expressed as:

$Krg=Cr \cdot Sr \cdot Tb$, $Krb=Cr \cdot Sr \cdot Tg$,

$Kgr=Cg \cdot Sg \cdot Tb$, $Kgb=Cg \cdot Sg \cdot Tr$,

$Kbr=Cb \cdot Sb \cdot Tg$, $Kbg=Cb \cdot Sb \cdot Tr$,

$Kyg=Cy \cdot Sr \cdot Tb$, $Kmb=Cm \cdot Sr \cdot Tg$,

$Kmr=Cm \cdot Sb \cdot Tg$, $Kcg=Cc \cdot Sb \cdot Tr$,

$Kcb=Cc \cdot Sg \cdot Tr$, $Kyr=Cy \cdot Sg \cdot Tb$,

$Tr=r^k$,

$Sr=(1-r)^k$,

$Tg=g^k$,

$Sg=(1-g)^k$,

$Tb=b^k$,

$Sb=(1-b)^k$,

where Cr, Cb, Cg, Cy, Cm, Cc and k are constants, and the r, g and b are obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1.

13. (Withdrawn) The color display device as set forth in claim 12, wherein:

the constant k is 1.

14. (Withdrawn) The color display device as set forth in claim 5, wherein:

the Cr, Cb, Cg, Cy, Cm and Cc are constants expressed as 1/(integer power of 2).

15. (Currently Amended) The color display device as set forth in claim 42, wherein:

the variables Nr and Ny are not less than 21.

16. (Currently Amended) The color display device as set forth in claim 42, wherein:

the variables Ng, Nb, Nm and Nc are not more than 21.

17. (Withdrawn– Previously Presented) The color display device as set forth in claim 139, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

$$\begin{pmatrix} r' \\ g' \\ b' \end{pmatrix} = \begin{pmatrix} r \\ g \\ b \end{pmatrix} + A_{36} \begin{pmatrix} ro \\ go \\ bo \\ yo \\ mo \\ co \end{pmatrix}$$

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and A_{36} expresses square matrix of 3x6; and

in a case [1] where r≥g≥b:

$ro=Krg(r-g)^{Nr}$,

$yo=Kyg(g-b)^{Ny}$,

go=bo=mo=co=0,

in a case [2] where r≥b>g:

$ro=Krb(r-b)^{Nr}$,

$mo=Kmb(b-g)^{Nm}$,

go=bo=yo=co=0,

in a case [3] where b>r≥g:

$bo=Kbr(b-r)^{Nb}$,

$mo=Kmr(r-g)^{Nm}$,

ro=go=yo=co=0,

in a case [4] where b>g>r:

$bo=Kbg(b-g)^{Nb}$,

$co=Kcg(g-r)^{Nc}$,

ro=go=yo=mo=0,

in a case [5] where g≥b>r:

$go=Kgb(g-b)^{Ng}$,

$co=Kcb(b-r)^{Nc}$,

ro=bo=yo=mo=0,

in a case [6] where g>r≥b:

$go=Kgr(g-r)^{Ng}$,

$yo=Kyr(r-b)^{Ny}$,

ro=bo=mo=co=0,

in which Krg, Krb, Kbr, Kbg, Kgb, Kgr, Kyg, Kyr, Kmb, Kmr, Kcg and Kcb are variables which change depending on values of r, g and b; and Nr, Ng, Nb, Ny, Nm and Nc are constants not less than 0.

18. (Withdrawn) The color display device as set forth in claim 17, wherein:

the A_{36} is expressed as:

$$A_{36} = \begin{pmatrix} a11 & a12 & a13 & a14 & a15 & a16 \\ a21 & a22 & a23 & a24 & a25 & a26 \\ a31 & a32 & a33 & a34 & a35 & a36 \end{pmatrix}$$

where a11=a22=a33=a14=a24=a15=a35=a26=a36=1 and a21, a31, a12, a32, a13, a23, a34, a25 and a16 are 0 or a negative value.

19. (Withdrawn) The color display device as set forth in claim 17, wherein:

the A_{36} is expressed as:

$$A_{36} = \begin{pmatrix} a11 & a12 & a13 & a14 & a15 & a16 \\ a21 & a22 & a23 & a24 & a25 & a26 \\ a31 & a32 & a33 & a34 & a35 & a36 \end{pmatrix}$$

where a11=a22=a33=a14=a24=a15=a35=a26=a36=1, a11+a21+a31=0, a12+a22+a32=0, a13+a23+a33=0, a14+a24+a34=0, a15+a25+a35=0, and a16+a26+a36=0.

20. (Withdrawn) The color display device as set forth in claim 17, wherein:

the A_{36} is expressed as:

$$A_{36} = \begin{pmatrix} a11 & a12 & a13 & a14 & a15 & a16 \\ a21 & a22 & a23 & a24 & a25 & a26 \\ a31 & a32 & a33 & a34 & a35 & a36 \end{pmatrix}$$

where a11=a22=a33=a14=a24=a15=a35=a26=a36=1, a21=a31=a12=a32=a13=a23=-0.5, and a34=a25=a16=-2.

21. (Previously Presented) The color display device as set forth in claim 139, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

$$\begin{pmatrix} r' \\ g' \\ b' \end{pmatrix} = \begin{pmatrix} r \\ g \\ b \end{pmatrix} + A_{36} \begin{pmatrix} ro \\ go \\ bo \\ yo \\ mo \\ co \end{pmatrix}$$

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and A_{36} expresses square matrix of 3x6; and

in a case [1] where r≥g≥b:

$ro=Krg(fzr(r)-fzg(g))^{Nr}$,

$yo=Kyg(fzg(g)-fzb(b))^{Ny}$,

go=bo=mo=co=0,

in a case [2] where r≥b>g:

$ro=Krb(fzr(r)-fzb(b))^{Nr}$,

$mo=Kmb(fzb(b)-fzg(g))^{Nm}$,

go=bo=yo=co=0,

in a case [3] where b>r≥g:

$bo=Kbr(fzb(b)-fzr(r))^{Nb}$.

$mo=Kmr(fzr(r)-fzg(g))^{Nm}$,

ro=go=yo=co=0,

in a case [4] where b>g>r:

$bo=Kbg(fzb(b)-fzg(g))^{Nb}$,

$co=Kcg(fzg(g)-fzr(r))^{Nc}$,

ro=go=yo=mo=0,

in a case [5] where g≥b>r:

$go=Kgb(fzg(g)-fzb(b))^{Ng}$,

$co=Kcb(fzb(b)-fzr(r))^{Nc}$,

ro=bo=yo=mo=0,

in a case [6] where g>r≥b:

$go=Kgr(fzg(g)-fzr(r))^{Ng}$,

$yo=Kyr(fzr(r)-fzb(b))^{Ny}$,

ro=bo=mo=co=0,

in which Krg, Krb, Kbr, Kbg, Kgb, Kgr, Kyg, Kyr, Kmb, Kmr, Kcg and Kcb are variables which change depending on values of r, g and b, Nr, Ng, Nb, Ny, Nm and Nc are constants not less than 0, and fzr, fzg, fzb are functions which respectively change depending on values of r, g and b in corresponding brackets.

22. (Original) The color display device as set forth in claim 21, wherein:

the functions fzr, fzg, fzb convert input values identical with each other into output values different from each other.

23. (Original) The color display device as set forth in claim 21, wherein:

the functions fzr, fzg, fzb satisfy $fzr=r^{2.2}$, $fzg=g^{2.2}$ and $fzb=b^{2.2}$.

24. (Original) The color display device as set forth in claim 21, wherein:

the functions fzr, fzg, fzb satisfy $fzr=r^2$, $fzg=g^2$ and $fzb=b^2$.

25. (Withdrawn– Previously Presented) The color display device as set forth in claim 139, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

r'=r+ro+yo+mo,

g'=g+go+yo+co,

b'=b+bo+mo+co,

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and,

in a case [1] where r≥g≥b:

ro=Krg·fnr(r-g),

yo=Kyg·fny(g-b),

go=bo=mo=co=0,

in a case [2] where r≥b>g:

ro=Krb·fnr(r-b),

mo=Kmb·fnm(b-g),

go=bo=yo=co=0,

in a case [3] where b>r≥g:

bo=Kbr·fnb(b-r),

mo=Kmr·fnm(r-g),

ro=go=yo=co=0,

in a case [4] where b>g>r:

bo=Kbg·fnb(b-g),

co=Kcg·fnc(g-r),

ro=go=yo=mo=0,

in a case [5] where g≥b>r:

go=Kgb·fng(g-b),

co=Kcb·fnc(b-r),

ro=bo=yo=mo=0,

in a case [6] where g>r≥b:

go=Kgr·fng(g-r),

yo=Kyr·fny(r-b),

ro=bo=mo=co=0,

in which Krg, Krb, Kbr, Kbg, Kgb, Kgr, Kyg, Kyr, Kmb, Kmr, Kcg and Kcb are variables which change depending on values of r, g and b; and fnr(DX), fng(DX), fnb(DX), fny(DX), fnm(DX) and fnc(DX) are functions which respectively change depending on calculation results DX (0≤DX≤1) of corresponding brackets.

26. (Withdrawn) The color display device as set forth in claim 25, wherein:

the functions fnr(DX) and fny(DX) each give a negative value at least at a predetermined value in a range of 0<DX≤1.

27. (Withdrawn) The color display device as set forth in claim 25, wherein:

the functions fnr(DX) and fny(DX) are expressed as:

$fnr(DX)=DX^2-Pr\cdot DX$,

$fny(DX)=DX^2-Py\cdot DX$,

where Pr and Py are constants greater than 0.

28. (Withdrawn– Previously Presented) The color display device as set forth in claim 139, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

$r'=r+ro+yo+mo$,

$g'=g+go+yo+co$,

$b'=b+bo+mo+co$,

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and,

in a case [1] where $r \geq g \geq b$:

$ro=Cr(r-g)^{Nr}$,

$yo=Cy(g-b)^{Ny}$,

$go=bo=mo=co=0$,

in a case [2] where $r \geq b > g$:

$ro=Cb(r-b)^{Nr}$,

$mo=Cm(b-g)^{Nm}$,

$go=bo=yo=co=0$,

in a case [3] where $b > r \geq g$:

$bo=Cb(b-r)^{Nb}$,

$mo=Cm(r-g)^{Nm}$,

$ro=go=yo=co=0$,

in a case [4] where $b > g > r$:

$bo=Cb(b-g)^{Nb}$,

$co=Cc(g-r)^{Nc}$,

$ro=go=yo=mo=0$,

in a case [5] where $g \geq b > r$:

$go=Cg(g-b)^{Ng}$,

$co=Cc(b-r)^{Nc}$,

$ro=bo=yo=mo=0$, and

in a case [6] where $g > r \geq b$:

$go=Cg(g-r)^{Ng}$,

$yo=Cy(r-b)^{Ny}$,

ro=bo=mo=co=0,

in which Cr, Cg, Cb, Cy, Cm, Cc, Nr, Ng, Nb, Ny, Nm, and Nc are constants.

29. (Withdrawn– Previously Presented) The color display device as set forth in claim 139, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

$$\begin{pmatrix} r' \\ g' \\ b' \end{pmatrix} = \begin{pmatrix} r \\ g \\ b \end{pmatrix} + A_{36} \begin{pmatrix} ro \\ go \\ bo \\ yo \\ mo \\ co \end{pmatrix}$$

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and A_{36} expresses square matrix of 3x6; and

in a case [1] where r≥g≥b:

ro=Cr(r-g),

yo=Cy(g-b),

go=bo=mo=co=0,

in a case [2] where [2]r≥b>g:

ro=Cr(r-b),

mo=Cm(b-g),

go=bo=yo=co=0,

in a case [3] where b>r≥g:

bo=Cb(b-r),

mo=Cm(r-g),

ro=go=yo=co=0,

in a case [4] where b>g>r:

bo=Cb(b-g),

co=Cc(g-r),

ro=go=yo=mo=0,

in a case [5] where g≥b>r:

go=Cg(g-b),

co=Cc(b-r),

ro=bo=yo=mo=0, and

in a case [6] where g>r≥b:

go=Cg(g-r),

yo=Cy(r-b),

ro=bo=mo=co=0,

in which Cr, Cg, Cb, Cy, Cm, and Cc are constants.

30. (Withdrawn– Previously Presented) The color display device as set forth in claim 139, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

r'=r+ro+yo+mo

g'=g+go+yo+co

b'=b+bo+mo+co

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and,

in a case [1] where (r≥g≥b):

ro=Cr (fzr (r)-fzg (g)),

yo=Cy (fzg (g)-fzb (b)),

go=bo=mo=co=0,

in a case [2] where (r≥b>g):

ro=Cr (fzr (r)-fzb(b)),

mo=Cm (fzb (b)-fzg(g)),

go=bo=yo=co=0,

in a case [3] where (b>r≥g):

bo=Cb (fzb (b)-fzr(r)),

mo=Cm (fzr (r)-fzg(g)),

ro=go=yo=co=0,

in a case [4] where (b>g>r):

bo=Cb (fzb (b)-fzg(g)),

co=Cc (fzg (g)-fzr(r)),

ro=go=yo=mo=0,

in a case [5] where (g≥b>r):

go=Cg (fzg (g)-fzb(b)),

co=Cc (fzb (b)-fzr(r)),

ro=bo=yo=mo=0, and

in a case [6] where (g>r≥b):

go=Cg (fzg (g)-fzr(r)),

yo=Cy(fz r(r)-fzb(b)),

ro=bo=mo=co=0,

Where Cr, Cg, Cb, Cy, Cm and Cc are constants; and fzr, fzg and fzb are functions which change depending on the values of r, g and b in corresponding brackets.

31. (Previously Presented) The color display device as set forth in claim 139, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

r'=r+ro+yo+mo

g'=g+go+yo+co

b'=b+bo+mo+co

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and,

ro=Cr·min (rg, rb),

go=Cg·min (gr, gb),

bo=Cb·min (br, bg),

yo=Cy·min (rb, gb),

mo=Cm·min (rg, bg),

co=Cc·min (gr, br),

in which min () is a function for giving a smallest value in a corresponding bracket; and Cr, Cg, Cb, Cy, Cm and Cc are constants,

on condition that:

rg=r-g,

rb=r-b,

gr=g-r,

gb=g-b,

br=b-r,

bg=b-g,

in which each of rg, rb, gr, gb, br and bg are modified to 0 when they are minus values.

32. (Previously Presented) The color display device as set forth in claim 139, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

r'=r+ro+yo+mo

g'=g+go+yo+co

b'=b+bo+mo+co

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and

ro=Krg·rg where rg<rb,

ro=Krb·rb where rg>rb,

go=Kgr·gr where gr<gb,

go=Kgb·gb where gr>gb,

bo=Kbr·br where br<bg,

bo=Kbg·bg where br>bg,

yo=Kyr·rb where rb<gb,

yo=Kyg·gb where rb>gb,

mo=Kmr·rg where rg<bg,

mo=Kmb·bg where rg>bg,

co=Kcg·gr where gr<br,

co=Kcb·br where gr>br,

in which Krg, Krb, Kbr, Kbg, Kgb, Kgr, Kyg, Kyr, Kmb, Kmr, Kcg and Kcb are variables which change depending on values of r, g and b,

on condition that:

rg=r-g,

rb=r-b,

gr=g-r,

gb=g-b,

br=b-r,

bg=b-g,

in which each of rg, rb, gr, gb, br and bg are modified to 0 when they are minus values.

33. (Previously Presented) A method, comprising:

a) determining a relationship between plural color components of an input color image signal in terms of gradation levels of the plural color components of the input color image signal;

b) processing the input color image signal by carrying out calculation based on the determined relationship for each of the plural color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the plural color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation is carried out; and

c) displaying the processed color image signal on a color display panel.

34. (Previously Presented) A method, comprising:

a) determining a relationship between three color components of an input color image signal in terms of gradation levels of the three color components of the input color image signal;

b) processing the input color image signal by carrying out a different calculation for each input color image signal depending on which of six patterns of the determined relationship that the input color image signal belongs to,

wherein:

the calculation in the step (b) is carried out individually for each of the three color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the three color components, and wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation is carried out; and

c) displaying the processed color image signal on a color display panel.

35. - 36. (Cancelled)

37. (Previously Presented) A storage medium readable by a computer and storing a program for causing a computer to execute the steps of:

a) determining a relationship between plural color components of an input color image signal in terms of gradation levels of the plural color components of the input color image signal;

b) processing the input color image signal by carrying out calculation based on the determined relationship for each of the plural color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the plural color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation is carried out; and

c) providing the processed color image signal for display on a color display panel.

38. (Previously Presented) A storage medium readable by a computer and storing a program for causing a computer to execute the steps of:

a) determining a relationship between three color components of an input color image signal in terms of gradation levels of the three color components of the input color image signal;

b) processing the input color image signal by carrying out a calculation for each input color image signal depending on which of six patterns of the determined relationship that the input color image signal belongs to, the calculation being carried out individually for each of the three color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the three color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation is carried out; and

c) providing the processed color image signal for display on a color display panel.

39. (Withdrawn- Previously Presented) A color display device, comprising:

a color processor to determine a relationship between plural color components of an input color image signal in terms of gradation levels of the plural color components of the input color image signal, and to process the input color image signal by carrying out calculation based on the determined relationship, the calculation performing multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, extracted from the plural color components of the input color image signal, by a coefficient, and performing at least one of addition and subtraction of results of the multiplication to the plural color components; and

a color display panel to display the processed color image signal.

40. (Withdrawn- Previously Presented) A color display device, comprising:

a color processor to determine a relationship between three color components of an input color image signal in terms of gradation levels of the three color components of an input color image signal, and to process the input color image signal by carrying out a different calculation for each input color image signal depending on which of six patterns of the determined relationship that the input color image signal belongs to, the calculation performing multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, extracted from the three color components of the input color image signal, by a coefficient, and performing at least one of addition and subtraction of results of the multiplication to the three color components; and

a color display panel to display the processed color image signal.

41. (Withdrawn- Previously Presented) The color display device as set forth in claim 39, wherein:

the processor carries out the calculation individually for each of the three color components excluding a component with a smallest gradation level, using variables that vary depending on the respective gradation levels of the three color components.

42. (Withdrawn- Previously Presented) The color display device as set forth in claim 39, wherein:

the processor compensates white color by using a coefficient which gives a positive value when the white component of the input color image signal has high luminance and gives a negative value when the white component of the input color image signal has low luminance.

43. (Withdrawn) The color display device as set forth in claim 39, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

$r'=r+ro+yo+mo+wo,$

$g'=g+go+yo+co+wo,$

$b'=b+bo+mo+co+wo,$

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and,

in a case [1] where $r \geq g \geq b$,

$ro=Krg(r-g)^{Nr}$,

$yo=Kyg(g-b)^{Ny}$,

$wo=fw(b)$,

$go=bo=mo=co=0$,

in a case [2] where $r \geq b > g$,

$ro=Krb(r-b)^{Nr}$,

$mo=Kmb(b-g)^{Nm}$,

$wo=fw(g)$,

$go=bo=yo=co=0$,

in a case [3] where $b > r \geq g$,

$bo=Kbr(b-r)^{Nb}$,

$mo=Kmr(r-g)^{Nm}$,

$wo=fw(g)$,

$ro=go=yo=co=0$,

in a case [4] where $b > g > r$,

$bo=Kbg(b-g)^{Nb}$,

$co=Kcg(g-r)^{Nc}$,

$wo=fw(r)$,

$ro=go=yo=mo=0$,

in a case [5] where $g \geq b > r$,

$go=Kgb(g-b)^{Ng}$,

$co=Kcb(b-r)^{Nc}$,

$wo=fw(r)$,

ro=bo=yo=mo=0,

in a case [6] where g>r≥b,

go=Kgr(g-r)^{Ng},

yo=Kyr(r-b)^{Ny},

wo=fw(b),

ro=bo=mo=co=0,

in which Krg, Krb, Kbr, Kbg, Kgb, Kgr, Kyg, Kyr, Kmb, Kmr, Kcg, Kcb and kw are either constants, or variables changing depending on values of r, g and b; Nr, Ng and Nr are constants not less than 0, and fw is a function which changes depending on the values of r, g and b in the corresponding bracket.

44. (Withdrawn) The color display device as set forth in claim 43, wherein:

the variables are expressed as:

Krg=Cr·αr·αb, Krb=Cr·αr·αg,

Kgr=Cg·αg·αb, Kgb=Cg·αg·αr,

Kbr=Cb·αb·αg, Kbg=Cb·αb·αr,

Kyg=Cy·αr·αb, Kmb=Cm·αr·αg,

Kmr=Cm·αb·αg, Kcg=Cc·αb·αr,

Kcb=Cc·αg·αr, Kyr=Cy·αg·αb,

$\alpha r=f_0\times r^k$ (0≤r<Mr),

$\alpha r=f_1\times(1-r)^k$ (Mr≤r≤1),

$\alpha g=g_0\times g^k$ (0≤g<Mg),

$\alpha g=g_1\times(1-g)^k$ (Mg≤g≤1),

$\alpha b=h_0\times b^k$ (0≤b<Mb),

$\alpha b=h_1\times(1-b)^k$ (Mb≤b≤1),

where Cr, Cb, Cg, Cy, Cm and Cc are constants, and the r, g and b are obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1.

45. (Withdrawn) The color display device as set forth in claim 43, wherein:

the variables are expressed as:

$Krg=Cr\cdot\alpha r\cdot\alpha b$, $Krb=Cr\cdot\alpha r\cdot\alpha g$,

$Kgr=Cg\cdot\alpha g\cdot\alpha b$, $Kgb=Cg\cdot\alpha g\cdot\alpha r$,

$Kbr=Cb\cdot\alpha b\cdot\alpha g$, $Kbg=Cb\cdot\alpha b\cdot\alpha r$,

$Kyg=Cy\cdot\alpha r\cdot\alpha b$, $Kmb=Cm\cdot\alpha r\cdot\alpha g$,

$Kmr=Cm\cdot\alpha b\cdot\alpha g$, $Kcg=Cc\cdot\alpha b\cdot\alpha r$,

$Kcb=Cc\cdot\alpha g\cdot\alpha r$, $Kyr=Cy\cdot\alpha g\cdot\alpha b$,

$\alpha r=2\times r$ $(0\le r<0.5)$,

$\alpha r=2\times(1-r)$ $(0.5\le r\le 1)$,

$\alpha g=2\times g$ $(0\le g<0.5)$,

$\alpha g=2\times(1-g)$ $(0.5\le g\le 1)$,

$\alpha b=2\times b$ $(0\le b<0.5)$,

$\alpha b=2\times(1-b)$ $(0.5\le b\le 1)$,

where Cr, Cb, Cg, Cy, Cm and Cc are constants, and r, g and b are obtained by dividing the original gradation levels of the R, G and B components of the input image signal by the maximum gradation value N-1.

46. (Withdrawn) The color display device as set forth in claim 43, wherein:

the variables are expressed as:

$Krg=Cr\cdot Sr\cdot Tb$, $Krb=Cr\cdot Sr\cdot Tg$,

$Kgr=Cg\cdot Sg\cdot Tb$, $Kgb=Cg\cdot Sg\cdot Tr$,

$Kbr=Cb\cdot Sb\cdot Tg$, $Kbg=Cb\cdot Sb\cdot Tr$,

$Kyg=Cy\cdot Sr\cdot Tb$, $Kmb=Cm\cdot Sr\cdot Tg$,

$Kmr=Cm\cdot Sb\cdot Tg$, $Kcg=Cc\cdot Sb\cdot Tr$,

$Kcb=Cc\cdot Sg\cdot Tr$, $Kyr=Cy\cdot Sg\cdot Tb$,

$Tr=r^k$,

$Sr=(1-r)^k$,

$Tg=g^k$,

$Sg=(1-g)^k$,

$Tb=b^k$,

$Sb=(1-b)^k$,

where Cr, Cb, Cg, Cy, Cm, Cc and k are constants, and r, g and b are obtained by dividing the original gradation levels of the R, G and B components of the input image signal by the maximum gradation value N-1.

47. (Withdrawn) The color display device as set forth in claim 46, wherein:

the constant k is 1.

48. (Withdrawn) The color display device as set forth in claim 43, wherein:

the function fw changes depending on an average luminance and a peak luminance of a whole image.

49. (Withdrawn) The color display device as set forth in claim 43, wherein:

the function fw satisfies: $fw(X)=CwX^Z$,

where Cw and Z are constants, and X is one of the r, g and b.

50. (Withdrawn) The color display device as set forth in claim 43, wherein:

the function fw are expressed as:

$fw(X)=Cw_0X \quad (0\leq X<Mw)$,

$fw(X)=Cw_1(1-X) \quad (Mw\leq X\leq 1)$,

where Cw_0, Cw_1, Mw are constants.

51. (Withdrawn) The color display device as set forth in claim 39, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

r'=r+ro+yo+mo+wo

g'=g+go+yo+co+wo

b'=b+bo+mo+co+wo

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and

in a case [1] where (r≥g≥b):

ro=Cr(r-g),

yo=Cy(g-b),

wo=fw(b),

go=bo=mo=co=0,

in a case [2] where (r≥b>g):

ro=Cr(r-b),

mo=Cm(b-g),

wo=fw(g),

go=bo=yo=co=0,

in a case [3] where (b>r≥g):

bo=Cb(b-r),

mo=Cm(r-g),

wo=fw(g),

ro=go=yo=co=0,

in a case [4] where (b>g>r):

bo=Cb(b-g),

co=Cc(g-r),

wo=fw(r),

ro=go=yo=mo=0,

in a case [5] where (g≥b>r):

go=Cg(g-b),

co=Cc(b-r),

wo=fw(r),

ro=bo=yo=mo=0, and

in a case [6] where (g>r≥b):

go=Cg(g-r),

yo=Cy(r-b),

wo=fw(b),

ro=bo=mo=co=0,

in which Cr, Cg, Cb, Cy, Cm, and Cc are constants; and fw is a function dynamically changes depending on an average luminance and a peak luminance of a whole image.

52. (Withdrawn) The color display device as set forth in claim 39, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

r'=r+ro+yo+mo+wo

g'=g+go+yo+co+wo

b'=b+bo+mo+co+wo

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and,

ro=Cr·min (rg, rb),

go=Cg·min (gr, gb),

bo=Cb·min (br, bg),

yo=Cy·min (rb, gb),

mo=Cm·min (rg, bg),

co=Cc·min (gr, br),

wo=fw·min (r, g, b),

in which min () is a function for giving a smallest value in a corresponding bracket,

on condition that:

rg=r-g,

rb=r-b,

gr=g-r,

gb=g-b,

br=b-r,

bg=b-g,

in which each of rg, rb, gr, gb, br and bg are modified to 0 when they are minus values.

53. (Withdrawn) The color display device as set forth in claim 39, wherein:

the input color image signal is converted into an output color image signal with the three color components respectively having gradation levels of r', g' and b', which are given by:

r'=r+ro+yo+mo+wo

g'=g+go+yo+co+wo

b'=b+bo+mo+co+wo

where r, g and b are values obtained by dividing original gradation levels of the three color components of the input color image signal by a maximum gradation value N-1; and

ro=Krg·rg where rg<rb,

ro=Krb·rb where rg>rb,

go=Kgr·gr where gr<gb,

go=Kgb·gb where gr>gb,

bo=Kbr·br where br<bg,

bo=Kbg·bg where br>bg,

yo=Kyr·rb where rb<gb,

yo=Kyg·gb where rb>gb,

mo=Kmr·rg where rg<bg,

mo=Kmb·bg where rg>bg,

co=Kcg·gr where gr<br,

co=Kcb·br where gr>br,

wo=fw (min (r, g, b)),

in which min () is a function for giving a smallest value in a corresponding bracket; Krg, Krb, Kbr, Kbg, Kgb, Kgr, Kyg, Kyr, Kmb, Kmr, Kcg and Kcb are variables which change depending on values of r, g and b; and fw is a function which changes depending on a value in a corresponding bracket,

on condition that:

rg=r-g,

rb=r-b,

gr=g-r,

gb=g-b,

br=b-r,

bg=b-g,

in which each of rg, rb, gr, gb, br and bg are modified to 0 when they are minus values.

54. (Withdrawn- Previously Presented) A method, comprising:

a) determining a relationship between plural color components of an input color image signal in terms of their gradation levels;

b) processing the input color image signal by carrying out calculation based on the determined relationship, the calculation performing multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, that have been extracted from the plural color components of the input color image signal, by a coefficient, and performing at least one of addition and subtraction of results of the multiplication to the plural color components; and

c) displaying the processed color image signal on a color display panel.

55. (Withdrawn- Previously Presented) A method, comprising:

a) determining a relationship between three color components of an input color image signal in terms of their gradation levels;

b) processing the input color image signal by carrying out a different calculation for each input color image signal depending on whether the input color image signal belongs to which of six patterns of the determined relationship,

wherein the calculation in the step (b) performs multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of RGB components and 3) white component, that have been extracted from the three color components of the input color image signal, by a coefficient, and performs at least one of addition and subtraction of results of the multiplication to the three color components; and

c) displaying the processed color image signal on a color display panel.

56. (Withdrawn- Previously Presented) A program for causing a computer to execute the steps of:

a) determining a relationship between plural color components of an input color image signal in terms of their gradation levels;

b) processing the input color image signal by carrying out calculation based on the determined relationship, the calculation performing multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, that have been extracted from the plural color components of the input color image signal, by a coefficient, and performing at least one of addition and subtraction of results of the multiplication to the plural color components; and

c) providing the processed color image signal for display on a color display panel.

57. (Withdrawn- Previously Presented) A program for causing a computer to execute the steps of:

a) determining a relationship between three color components of an input color image signal in terms of their gradation levels; and

b) processing the input color image signal by carrying out a different calculation for each input color image signal depending on whether the input color image signal belongs to which of six patterns of the determined relationship, the calculation performing multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, that have been extracted from the three color components of the input color image signal, by a coefficient, and performing at least one of addition and subtraction of results of the multiplication to the three color components; and

c) providing the processed color image signal for display on a color display panel.

58. (Withdrawn- Previously Presented) A storage medium readable by a computer and storing a program for causing a computer to execute the steps of:

a) determining a relationship between plural color components of an input color image signal in terms of their gradation levels; and

b) processing the input color image signal by carrying out calculation based on the determined relationship, the calculation performing multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, that have been extracted from the plural color components of the input color image signal, by a coefficient, and performing at least one of addition and subtraction of results of the multiplication to the plural color components; and

c) providing the processed color image signal for display on a color display panel.

59. (Withdrawn- Previously Presented) A storage medium readable by a computer and storing a program for causing a computer to execute the steps of:

a) determining a relationship between three color components of an input color image signal in terms of their gradation levels; and

b) processing the input color image signal by carrying out a different calculation for each input color image signal depending on whether the input color image signal belongs to which of six patterns of the determined relationship, the calculation performing multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, that have been extracted from the three color components of the input color image signal, by a coefficient, and performing at least one of addition and subtraction of results of the multiplication to the three color components; and

c) providing the processed color image signal for display on a color display panel.

60. (Previously Presented) The color display device as set forth in claim 2, further comprising:

detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg,

fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

61. (Original) The color display device as set forth in claim 60, wherein:

the detector detects light intensity of outside of the color display device.

62. (Previously Presented) The color display device as set forth in claim 2, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

63. (Previously Presented) A color display device, comprising:

means for determining a relationship between plural color components of an input color image signal in terms of the gradation levels of the plural color components of the input color image signal;

means for processing the input color image signal by carrying out calculation based on the determined relationship for each of the plural color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the plural color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation is carried out; and

means for displaying the processed color image signal.

64. (Original) The color display device as set forth in claim 63, wherein:

the variables are determined so that gradation levels of the input color image signal after color compensation fall within a range of a color model that expresses the gradation levels of the input color image signal before and after color compensation in terms of distributions of hue, luminance and saturation.

65. (Previously Presented) A color display device, comprising:

means for determining a relationship between three color components of an input color image signal in terms of the gradation levels of the three color components of the input color image signal;

means for processing the input color image signal by carrying out a calculation for each input color image signal, the calculation being dependent upon which of six patterns of the determined relationship that the input color image signal belongs to, the calculation further being performed for each of the three color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the three color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation is carried out; and

means for displaying the processed color image signal.

66. (Previously Presented) A color display method, comprising:

determining a relationship between plural color components of an input color image signal in terms of the gradation levels of the plural color components of the input color image signal;

processing the input color image signal by carrying out calculation based on the determined relationship for each of the plural color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the plural color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation is carried out; and

displaying the processed color image signal on a color display panel.

67. (Original) The color display method as set forth in claim 66, wherein:

the variables are determined so that gradation levels of the input color image signal after color compensation fall within a range of a color model that expresses

the gradation levels of the input color image signal before and after color compensation in terms of distributions of hue, luminance and saturation.

68. (Original) The color display method as set forth in claim 66, wherein the color display method is for a television receiver.

69. - 70. (Cancelled)

71. (Previously Presented) A computer readable medium including program segments for, when executed on a computer device, causing the computer device to implement the method of claim 66.

72. (Previously Presented) A color display method, comprising:

determining a relationship between three color components of an input color image signal in terms of the gradation levels of the three color components of the input color image signal;

processing the input color image signal by carrying out a calculation for each input color image signal, the calculation being dependent upon which of six patterns of the determined relationship that the input color image signal belongs to, the calculation further being performed for each of the three color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the three color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation is carried out; and

displaying the processed color image signal on a color display panel.

73. (Original) The color display method as set forth in claim 72, wherein the color display method is for a television receiver.

74. - 75. (Cancelled)

76. (Previously Presented) A computer readable medium including program segments for, when executed on a computer device, causing the computer device to implement the method of claim 72.

77. (Withdrawn) The color display device as set forth in claim 6, wherein:
the Cr, Cb, Cg, Cy, Cm and Cc are constants expressed as 1/(integer power of 2).

78. (Withdrawn) The color display device as set forth in claim 8, wherein:
the Cr, Cb, Cg, Cy, Cm and Cc are constants expressed as 1/(integer power of 2).

79. (Withdrawn) The color display device as set forth in claim 9, wherein:
the Cr, Cb, Cg, Cy, Cm and Cc are constants expressed as 1/(integer power of 2).

80. (Withdrawn) The color display device as set forth in claim 10, wherein:
the Cr, Cb, Cg, Cy, Cm and Cc are constants expressed as 1/(integer power of 2).

81. (Withdrawn) The color display device as set forth in claim 12, wherein:
the Cr, Cb, Cg, Cy, Cm and Cc are constants expressed as 1/(integer power of 2).

82. (Withdrawn- Previously Presented) A color display device, comprising:
means for determining a relationship between plural color components of an input color image signal in terms of gradation levels of the plural color components of the input color image signal;
means for processing the input color image signal by carrying out calculation based on the determined relationship, the calculation including

multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, extracted from the plural color components of the input color image signal, by a coefficient, and including at least one of addition and subtraction of results of the multiplication to the plural color components; and

means for displaying the processed color image signal .

83. (Withdrawn- Previously Presented) A color display device, comprising:

means for determining a relationship between three color components of an input color image signal in terms of gradation levels of the three color components of an input color image signal; and

means for processing the input color image signal by carrying out a different calculation for each input color image signal depending on which of six patterns of the determined relationship that the input color image signal belongs to, the calculation including multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, extracted from the three color components of the input color image signal, by a coefficient, and including at least one of addition and subtraction of results of the multiplication to the three color components; and

means for displaying the processed color image signal .

84. (Withdrawn- Previously Presented) A color display method, comprising:

determining a relationship between plural color components of an input color image signal in terms of gradation levels of the plural color components of the input color image signal;

processing the input color image signal by carrying out calculation based on the determined relationship, the calculation including multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, extracted from the plural color components of the input color image signal, by a coefficient, and including at least

one of addition and subtraction of results of the multiplication to the plural color components; and

displaying the processed color image signal on a color display panel.

85. (Withdrawn) The color display method as set forth in claim 84, wherein the color display method is for a television receiver.

86. (Withdrawn) A program, adapted to cause a computer to execute the method of claim 84.

87. (Withdrawn) A computer signal, comprising the program of claim 86.

88. (Withdrawn) A computer readable medium, comprising the program of claim 86.

89. (Withdrawn- Previously Presented) A color display method, comprising:

determining a relationship between three color components of an input color image signal in terms of gradation levels of the three color components of an input color image signal;

processing the input color image signal by carrying out a different calculation for each input color image signal depending on which of six patterns of the determined relationship that the input color image signal belongs to, the calculation including multiplication of each of 1) RGB adjustment components, 2) YMC components as complementary colors of the RGB components and 3) white component, extracted from the three color components of the input color image signal, by a coefficient, and including at least one of addition and subtraction of results of the multiplication to the three color components; and

displaying the processed color image signal on a color display panel.

90. (Withdrawn) The color display method as set forth in claim 89, wherein the color display method is for a television receiver.

91. (Withdrawn) A program, adapted to cause a computer to execute the method of claim 89.

92. (Withdrawn) A computer signal, comprising the program of claim 91.

93. (Withdrawn) A computer readable medium, comprising the program of claim 91.

94. (Withdrawn- Previously Presented) The color display device as set forth in claim 40, wherein:

the processor compensates white color by using a coefficient which gives a positive value when the white component of the input color image signal has high luminance and gives a negative value when the white component of the input color image signal has low luminance.

95. (Withdrawn- Previously Presented) The color display device as set forth in claim 40, wherein:

the processor carries out the calculation individually for each of the three color components excluding a component with a smallest gradation level, using variables that vary depending on the respective gradation levels of the three color components.

96. (Withdrawn- Previously Presented) The color display device as set forth in claim 17, further comprising:

a detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

97. (Withdrawn- Previously Presented) The color display device as set forth in claim 21, further comprising:

detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

98. (Withdrawn- Previously Presented) The color display device as set forth in claim 25, further comprising:

a detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

99. (Withdrawn- Previously Presented) The color display device as set forth in claim 28, further comprising:

a detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

100. (Withdrawn- Previously Presented) The color display device as set forth in claim 29, further comprising:

a detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

101. (Withdrawn- Previously Presented) The color display device as set forth in claim 30, further comprising:

a detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

102. (Withdrawn- Previously Presented) The color display device as set forth in claim 31, further comprising:

a detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

103. (Withdrawn- Previously Presented) The color display device as set forth in claim 43, further comprising:

a detector to detect environmental changes; and

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, according to a result of detection by the detector.

104. (Withdrawn- Previously Presented) The color display device as set forth in claim 17, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

105. (Withdrawn- Previously Presented) The color display device as set forth in claim 21, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr,

fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

106. (Withdrawn- Previously Presented) The color display device as set forth in claim 25, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

107. (Withdrawn- Previously Presented) The color display device as set forth in claim 28, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

108. (Withdrawn- Previously Presented) The color display device as set forth in claim 29, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

109. (Withdrawn- Previously Presented) The color display device as set forth in claim 30, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

110. (Withdrawn- Previously Presented) The color display device as set forth in claim 31, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

111. (Withdrawn- Previously Presented) The color display device as set forth in claim 43, further comprising:

color converter to control at least one of the coefficients Nr, Ng, Nb, Ny, Nm, Nc, Cr, Cg, Cb, Cy, Cm, Cc, Pr, Py and a factor of A_{36}, and the functions fzr, fzg, fzb, fw, fnr, fng, fnb, fny, fnm and fnc, depending on whether a backlight of a semi-transmission liquid crystal panel is on or off.

112. (Withdrawn- Previously Presented) A color display method, comprising:

determining a relationship between plural color components of an input color image signal in terms of the gradation levels of the plural color components of the input color image signal;

processing the input color image signal by carrying out color compensation for flesh colored areas of the input color image signal, the color compensation varying non-linearly in comparison to color compensation carried out for the remainder of the image; and

displaying the processed color image signal on a color display panel.

113. (Withdrawn) The color display method of claim 112, wherein color compensation for the remainder of the input color image signal is carried out from a calculation based on the relationship for each of the plural color components excluding a component with a relatively smallest gradation level, using variables varying depending on respective gradation levels of the plural color components.

114. (Withdrawn) The color display method as set forth in claim 113, wherein:

the variables are determined so that gradation levels of the input color image signal after color compensation fall within a range of a color model that expresses the gradation levels of the input color image signal before and after color compensation in terms of distributions of hue, luminance and saturation.

115. (Withdrawn) The color display method as set forth in claim 112, wherein the color display method is for a television receiver.

116. (Withdrawn) A program, adapted to cause a computer to execute the method of claim 112.

117. (Withdrawn) A computer signal, comprising the program of claim 116.

118. (Withdrawn) A computer readable medium, comprising the program of claim 116.

119. (Withdrawn- Previously Presented) A color display method, comprising:

determining a relationship between three color components of an input color image signal in terms of the gradation levels of the three color components of the input color image signal;

processing the input color image signal by carrying out color compensation for flesh colored areas of the input color image signal, the color compensation varying non-linearly in comparison to color compensation carried out for the remainder of the image; and

displaying the processed color image signal on a color display panel.

120. (Withdrawn) The color display method of claim 119, wherein color compensation for the remainder of the input color image signal is carried out from a calculation for each input color image signal, the calculation being dependent upon which of six patterns of the relationship that the input color image signal belongs to, the calculation further being performed for each of the three color

components excluding a component with a relatively smallest gradation level, using variables varying depending on respective gradation levels of the three color components.

121. (Withdrawn) The color display method as set forth in claim 119, wherein the color display method is for a television receiver.

122. (Withdrawn) A program, adapted to cause a computer to execute the method of claim 119.

123. (Withdrawn) A computer signal, comprising the program of claim 122.

124. (Withdrawn) A computer readable medium, comprising the program of claim 122.

125. (Withdrawn- Previously Presented) A method, comprising:

a) determining a relationship between plural color components of an input color image signal in terms of gradation levels of the plural color components of the input color image signal;

b) processing the input color image signal by carrying out color compensation of the input color image signal by controlling a gamma characteristic based upon at least one of average luminance and peak luminance of the input color input signal; and

c) displaying the processed color image signal on a color display panel.

126. (Withdrawn) The color display method of claim 125, wherein color compensation for the remainder of the input color image signal is carried out from a calculation for each input color image signal, the calculation being dependent upon which of six patterns of the relationship that the input color image signal belongs to, the calculation further being performed for each of the three color components excluding a component with a relatively smallest gradation level, using

variables varying depending on respective gradation levels of the three color components.

127. (Withdrawn) The color display method as set forth in claim 125, wherein the color display method is for a television receiver.

128. (Withdrawn) A program, adapted to cause a computer to execute the method of claim 125.

129. (Withdrawn) A computer signal, comprising the program of claim 128.

130. (Withdrawn) A computer readable medium, comprising the program of claim 128.

131. (Cancelled).

132. (Original) The color display device as set forth in claim 2, wherein:

the relatively greatest component in gradation level among the three components of RGB is compensated by using both the compensation value of the relatively greatest component and the compensation value of the complementary color of the relatively greatest component and the second relatively greatest component, and the second relatively greatest component in gradation level among the RGB components is compensated by using the compensation value of complementary color of the relatively greatest component and the second relatively greatest component.

133. (Cancelled).

134. (Original) The computer readable medium as set forth in claim 38, wherein:

the relatively greatest component in gradation level among the three components of RGB is compensated by using both the compensation value of the relatively greatest component and the compensation value of the complementary color of the relatively greatest component and the second relatively greatest component, and the second relatively greatest component in gradation level among the RGB components is compensated by using the compensation value of complementary color of the relatively greatest component and the second relatively greatest component.

135. (Cancelled).

136. (Original) The color display device as set forth in claim 65, wherein:

the relatively greatest component in gradation level among the three components of RGB is compensated by using both the compensation value of the relatively greatest component and the compensation value of the complementary color of the relatively greatest component and the second relatively greatest component, and the second relatively greatest component in gradation level among the RGB components is compensated by using the compensation value of complementary color of the relatively greatest component and the second relatively greatest component.

137. (Cancelled).

138. (Original) The color display device as set forth in claim 72, wherein:

the relatively greatest component in gradation level among the three components of RGB is compensated by using both the compensation value of the relatively greatest component and the compensation value of the complementary color of the relatively greatest component and the second relatively greatest component, and the second relatively greatest component in gradation level among the RGB components is compensated by using the compensation value of

complementary color of the relatively greatest component and the second relatively greatest component.

139. (Previously Presented) A color display device, comprising:

a color processor to determine a relationship between three color components of an input color image signal in terms of gradation levels of the three color components of an input color image signal, and to process the input color image signal by carrying out a different calculation for each input color image signal depending on which of six patterns of the determined relationship that the input color image signal belongs to, the calculation being performed for each of the three color components excluding a component with a relatively smallest gradation level, using variables varying depending on the relationship among the respective gradation levels of the three color components, wherein the gradation level of the color component with the relatively smallest gradation level remains unchanged before and after the calculation; and

a color display panel to display the processed color image signal.

140. (Previously Presented) The color display device of claim 1, wherein the color display panel is a color liquid crystal display panel.

141. (Previously Presented) The color display device of claim 139, wherein the color display panel is a color liquid crystal display panel.

142. (Previously Presented) The method of claim 33, wherein the color display panel is a color liquid crystal display panel.

143. (Previously Presented) The method of claim 34, wherein the color display panel is a color liquid crystal display panel.

144. (Previously Presented) The storage medium of claim 37, wherein the color display panel is a color liquid crystal display panel.

145. (Previously Presented) The storage medium of claim 38, wherein the color display panel is a color liquid crystal display panel.

146. (Previously Presented) The color display device of claim 63, wherein the means for displaying includes a color liquid crystal display panel.

147. (Previously Presented) The color display device of claim 65, wherein the means for displaying includes a color liquid crystal display panel.

148. (Previously Presented) The method of claim 66, wherein the color display panel is a color liquid crystal display panel.

149. (Previously Presented) The method of claim 72, wherein the color display panel is a color liquid crystal display panel.